WE CLAIM:

1. A method for measuring the acoustic damping capacity of a layered honeycomb structure, the method comprising:

tapping the honeycomb structure with a tapping rod, thereby imparting mechanical energy to the honeycomb structure;

measuring, for a time interval, energy reflected from the honeycomb structure as a result of the tapping;

creating a time-energy profile based on the energy reflected from the honeycomb structure during the time interval; and

evaluating the time-energy profile to determine the acoustic damping capacity of the honeycomb structure.

2. A method for measuring the damping capacity of a prosthetic dental implant structure to determine the stability of the implant structure, the method comprising:

tapping the implant structure with a tapping rod, thereby imparting mechanical energy to the implant structure;

measuring, for a time interval, energy reflected from the implant structure as a result of the tapping;

creating a time-energy profile based on the energy reflected from the implant structure during the time interval; and

evaluating the time-energy profile to determine the damping capacity of the implant structure.

3. A method for measuring the damping capacity of a tooth to assess the tooth health, the method comprising:

tapping the tooth with a tapping rod, thereby imparting mechanical energy to the tooth;

measuring, for a time interval, energy reflected from the tooth as a result of the tapping;

creating a time-energy profile based on the energy reflected from the tooth during the time interval; and

evaluating the time-energy profile to determine the damping capacity of the tooth.

4. A method for determining a damping capacity of an object, the method comprising:

tapping the object with a tapping rod, thereby imparting mechanical energy to the object;

measuring, for a time interval, energy reflected from the object as a result of the tapping;

creating a time-energy profile based on the energy reflected from the object during the time interval; and

evaluating the time-energy profile to determine the damping capacity of the object.

5. The method of Claim 4, wherein evaluating the time-energy profile further comprises evaluating the symmetry of a pulse of energy reflected from the object.

6. The method of Claim 4, wherein evaluating the time-energy profile further comprises counting the number of energy maxima reflected after the object is tapped.

7. The method of Claim 4, wherein evaluating the time-energy profile further comprises evaluating a force applied to the tapping rod during tapping as a function of displacement of the object.

8. The method of Claim 4, wherein the tapping rod is positioned within a housing that is mounted in contact with the object.

9. The method of Claim 4, wherein the tapping rod is oriented substantially perpendicular with respect to a surface of the object.

10. The method of Claim 4, wherein the object is held in compression during the tapping.

11. A method comprising:

tapping an object, thereby imparting mechanical energy to the object;

measuring energy reflected from the object as a result of the tapping;

creating a time-energy profile of the energy reflected from the object; and

evaluating the time-energy profile to make a determination regarding the structural characteristics of the object.

12. The method of Claim 11, wherein the object is held in compression during the tapping.

13. The method of Claim 11, wherein evaluating the time-energy profile further comprises evaluating the symmetry of a reflected energy pulse.

14. The method of Claim 11, wherein a cylindrical tapping rod is used to tap the object.

15. The method of Claim 11, wherein a cylindrical tapping rod is used to tap the object, and wherein the tapping rod is oriented substantially perpendicular with respect to a surface of the object.

16. The method of Claim 11, wherein a cylindrical tapping rod is used to tap the object, and wherein the tapping rod is positioned within a housing that is mounted in contact with the object.

17. The method of Claim 11, wherein evaluating the time-energy profile further comprises counting the number of energy maxima reflected after the object is tapped.

18. The method of Claim 11, wherein evaluating the time-energy profile further comprises making a determination of the damping capacity of the object.

19. The method of Claim 11, wherein evaluating the time-energy profile further comprises evaluating a force applied to the tapping rod during tapping as a function of displacement of the object.

20. The method of Claim 11, wherein the object is a tooth.

21. The method of Claim 11, wherein the object is a prosthetic dental implant structure.

22. The method of Claim 11, wherein the object comprises a layered honeycomb structure.

23. A system for providing information regarding the damping capacity of an object, the system comprising:

a test probe housing a movable impact rod, the test probe mounted against the object;

an accelerometer configured to detect energy reflected from the object after the impact rod impacts the object; and

a computer coupled to the accelerometer, the computer configured to generate and display a time-energy profile of the reflected energy as detected by the accelerometer.

24. The system of Claim 23, wherein the object is a tooth.

25. The system of Claim 23, wherein the object is a prosthetic dental implant structure.

26. The system of Claim 23, wherein the object comprises a layered honeycomb structure.

27. The system of Claim 23, further comprising a data analyzer to evaluate the symmetry of a reflected energy pulse detected by the accelerometer.

28. The system of Claim 23, further comprising a data analyzer to count the number of energy maxima reflected after the impact rod impacts the object.

29. The system of Claim 23, wherein the impact rod is oriented substantially perpendicular with respect to a surface of the object.

30. The system of Claim 23, further comprising a vise configured to hold the object in compression when the impact rod impacts the object.